

SEQUENCE LISTING

<110> ENDO, Hirofumi
 MIZOGUCHI, Hiroshi
 OZAKI, Akio
 YONETANI, Yoshiyuki
 HASHIMOTO, Shin-ichi

<120> Process for Producing HMG-CoA Reductase Inhibitor

<130> P21289

<140> US 09/869,334

<141> 2001-09-26

<150> PCT JP00/00472

<151> 2000-01-28

<160> 45

<170> PatentIn version 3.2

<210> 1

<211> 396

<212> PRT

<213> Bacillus subtilis

<400> 1

Met Asn Val Leu Asn Arg Arg Gln Ala Leu Gln Arg Ala Leu Leu Asn
 1 5 10 15

Gly Lys Asn Lys Gln Asp Ala Tyr His Pro Phe Pro Trp Tyr Glu Ser
 20 25 30

Met Arg Lys Asp Ala Pro Val Ser Phe Asp Glu Glu Asn Gln Val Trp
 35 40 45

Ser Val Phe Leu Tyr Asp Asp Val Lys Lys Val Val Gly Asp Lys Glu
 50 55 60

Leu Phe Ser Ser Cys Met Pro Gln Gln Thr Ser Ser Ile Gly Asn Ser
 65 70 75 80

Ile Ile Asn Met Asp Pro Pro Lys His Thr Lys Ile Arg Ser Val Val
85 90 95

Asn Lys Ala Phe Thr Pro Arg Val Met Lys Gln Trp Glu Pro Arg Ile
100 105 110

Gln Glu Ile Thr Asp Glu Leu Ile Gln Lys Phe Gln Gly Arg Ser Glu
115 120 125

Phe Asp Leu Val His Asp Phe Ser Tyr Pro Leu Pro Val Ile Val Ile
130 135 140

Ser Glu Leu Leu Gly Val Pro Ser Ala His Met Glu Gln Phe Lys Ala
145 150 155 160

Trp Ser Asp Leu Leu Val Ser Thr Pro Lys Asp Lys Ser Glu Glu Ala
165 170 175

Glu Lys Ala Phe Leu Glu Glu Arg Asp Lys Cys Glu Glu Glu Leu Ala
180 185 190

Ala Phe Phe Ala Gly Ile Ile Glu Glu Lys Arg Asn Lys Pro Glu Gln
195 200 205

Asp Ile Ile Ser Ile Leu Val Glu Ala Glu Glu Thr Gly Glu Lys Leu
210 215 220

Ser Gly Glu Glu Leu Ile Pro Phe Cys Thr Leu Leu Leu Val Ala Gly
225 230 235 240

Asn Glu Thr Thr Thr Asn Leu Ile Ser Asn Ala Met Tyr Ser Ile Leu
245 250 255

Glu Thr Pro Gly Val Tyr Glu Glu Leu Arg Ser His Pro Glu Leu Met
260 265 270

Pro Gln Ala Val Glu Glu Ala Leu Arg Phe Arg Ala Pro Ala Pro Val
 275 280 285

Leu Arg Arg Ile Ala Lys Arg Asp Thr Glu Ile Gly Gly His Leu Ile
 290 295 300

Lys Glu Gly Asp Met Val Leu Ala Phe Val Ala Ser Ala Asn Arg Asp
 305 310 315 320

Glu Ala Lys Phe Asp Arg Pro His Met Phe Asp Ile Arg Arg His Pro
 325 330 335

Asn Pro His Ile Ala Phe Gly His Gly Ile His Phe Cys Leu Gly Ala
 340 345 350

Pro Leu Ala Arg Leu Glu Ala Asn Ile Ala Leu Thr Ser Leu Ile Ser
 355 360 365

Ala Phe Pro His Met Glu Cys Val Ser Ile Thr Pro Ile Glu Asn Ser
 370 375 380

Val Ile Tyr Gly Leu Lys Ser Phe Arg Val Lys Met
 385 390 395

<210> 2
 <211> 1191
 <212> DNA
 <213> Bacillus subtilis

<400> 2
 atgaatgtgt taaaccgccg gcaagccttg cagcgagcgc tgctcaatgg gaaaaacaaa 60
 caggatgcgt atcatccggt tccatggtat gaatcgatga gaaaggatgc gcctgtttcc 120
 tttgatgaag aaaaccaagt gtggagcgtt tttctttatg atgatgtcaa aaaagttggt 180
 ggggataaag agttgttttc cagttgcatg ccgcagcaga caagctctat tggaaattcc 240
 atcattaaca tggacccgcc gaagcataca aaaatccggt cagtcgtgaa caaagccttt 300

```

actccgcgcg tgatgaagca atgggaaccg agaattcaag aaatcacaga tgaactgatt 360
caaaaatttc aggggcgcag tgagtttgac cttgttcacg atttttcata cccgcttccg 420
gttattgtga tatctgagct gctgggagtg ccttcagcgc agatggaaca gtttaaagca 480
tggtctgata ttctggtcag tacaccgaag gataaaagtg aagaagctga aaaagccttt 540
ttggaagaac gagataagtg tgaggaagaa ctggccgcgt tttttgccgg catcatagaa 600
gaaaagcgaa acaaaccgga acaggatatt atttctattt tagtggaagc ggaagaaaca 660
ggcgagaagc tgtccggtga agagctgatt ccgttttgca cgctgctgct ggtggccgga 720
aatgaaacca ctacaaacct gatttcaaat gcgatgtaca gcatattaga aacgccaggc 780
gtttacgagg aactgcgcag ccatactgaa ctgatgcctc aggcagtgga ggaagccttg 840
cgtttcagag cgccggcccc ggttttgagg cgcattgcc aagcgggatac ggagatcggg 900
gggcacctga ttaaagaagg tgatatggtt ttggcgtttg tggcatcggc aaatcgtgat 960
gaagcaaagt ttgacagacc gcacatgttt gatatccgcc gccatcccaa tccgcatatt 1020
gcgttttgcc acggcatcca tttttgcctt ggggccccgc ttgccgtct tgaagcaaatt 1080
atcgcgtaa cgtctttgat ttctgctttt cctcatatgg agtgcgtcag tatcactccg 1140
attgaaaaca gtgtgatata cggattaaag agcttccgtg tgaaaatgta a 1191

```

```

<210> 3
<211> 39
<212> DNA
<213> Artificial

```

```

<220>
<223> PCR Primer

```

```

<400> 3
tttgatccg aattcaaaag tgctggcgt gttccgttt

```

39

```

<210> 4
<211> 41
<212> DNA
<213> Artificial

```

<220>

<223> PCR Primer

<400> 4

gtgggatccg tcgaccaatt ttttcacgat gttcactccc c

41

<210> 5

<211> 39

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 5

ccaggatcct ctagatgggtg aaatgggtgt tgccgctct

39

<210> 6

<211> 39

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 6

tcaggatccc ccgggtgagc ggcaaatacca cccaccctg

39

<210> 7

<211> 37

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 7

taagcgcgcc ccgggttaat tggatgggcg aaagctc

37

<210> 8

<211> 39

<212> DNA

<213> Artificial

<220>
<223> PCR Primer

<400> 8
atcgcgcgcg tcgacgatag cggcagaaaa ttggcggca 39

<210> 9
<211> 38
<212> DNA
<213> Artificial

<220>
<223> PCR Primer

<400> 9
agcggatccg aattcgctgg aatcaaaagt cggccaga 38

<210> 10
<211> 38
<212> DNA
<213> Artificial

<220>
<223> PCR Primer

<400> 10
tcaggatccg tcgactgaga aaacacaaac gccccctc 38

<210> 11
<211> 39
<212> DNA
<213> Artificial

<220>
<223> PCR Primer

<400> 11
atgggatcct ctagacatgt tgtagtttgg gttggaatc 39

<210> 12
<211> 42
<212> DNA
<213> Artificial

<220>

<223> PCR Primer

<400> 12

gccggatcca gatctggcat cacacaacaa taaatacacc gc

42

<210> 13

<211> 39

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 13

tctggatcct ctagaagaga acacaaagag tacgaatgc

39

<210> 14

<211> 41

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 14

aaaggatccc ccgggtttac cagccagcgc aacaaagtca t

41

<210> 15

<211> 39

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 15

cctgaattct ctagaaggct ttcaccacgt attttgctg

39

<210> 16

<211> 41

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 16

tctgaattcc ccgggagaac aaaatgccaa aagcctgagt c

41

<210> 17

<211> 34

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 17

aatactagta caattgcatc gtcaactgca tctt

34

<210> 18

<211> 41

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 18

gtgggatccg tcgaccactt ttttcacgat gttcactccc c

41

<210> 19

<211> 34

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 19

gaaactagtt cttcaaaaga aaaaaagagt gtaa

34

<210> 20

<211> 39

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 20

tcaggatccc ccgggtgagc ggcaaatcca cccaccctg

39

<210> 21

<211> 34

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 21

taaactagta gccaatcgat taaattgttt agtg

34

<210> 22

<211> 34

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 22

ggaggtacct tatgccccgt caaacgcaac gaga

34

<210> 23

<211> 34

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 23

aggactagtc aaatggaaaa attgatgttt catc

34

<210> 24

<211> 38

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 24

tcaggatccg tcgactgaga aaacacaaac gccccctc

38

<210> 25

<211> 34

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 25

ggtactagta aggaaacaag cccgattcct cagc

34

<210> 26

<211> 42

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 26

gcgggatcca gatctggcat cacacaacaa taaatacacc gc

42

<210> 27

<211> 38

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 27

ttggatccac tagtaatgtg ttaaaccgcc ggcaagcc

38

<210> 28

<211> 41

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 28

aaaggatccc ccgggtttac cagccagcgc aacaaagtca t

41

<210> 29

<211> 34

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 29

atgactagta aacaggcaag cgcaatacct cagc

34

<210> 30

<211> 34

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 30

tttggtacct tacattcctg tccaaacgtc tttc

34

<210> 31

<211> 29

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 31

agcggtcgac aatgaatgtg ttaaaccgc

29

<210> 32

<211> 29

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 32

acgcgcatcc ttacattttc acacggaag

29

<210> 33

<211> 24

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 33

cgccagggtt ttcccagtca cgac

24

<210> 34

<211> 18

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 34

cgcaatatgc ggattggg

18

<210> 35

<211> 18

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 35

tttccggcca ccagcagc

18

<210> 36

<211> 18

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 36

taaccggaag cgggtatg

18

<210> 37

<211> 18

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 37

aaggaaacag gcgcatcc

18

<210> 38

<211> 67

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 38

tcgcctcgag tcgaggaggt cgactaatat gaacgttctg aaccgccgtc aagccttgca

60

gcgagcg

67

<210> 39

<211> 28

<212> DNA

<213> Artificial

<220>

<223> PCR Primer

<400> 39

tcgcggatcc ttacattttc acacggaa

28

<210> 40

<211> 715

<212> DNA
 <213> Artificial

<220>
 <223> Promoter Sequence

<400> 40
 cctgcaggtc atcacccgag caggcgaccc gaacgttcgg aggctcctcg ctgtccattc 60
 gctcccctgg cgcggtatga accgccgcct catagtgcag ttgatcctg acgagcccag 120
 catgtctgcg cccaccttcg cggaacctga ccagggtccg ctagcgggcg gccggaaggt 180
 gaatgctagg catgatctaa cctcgggtct ctggcgctgc gactgcgaaa tttcgcgagg 240
 gtttccgaga aggtgattgc gcttcgcaga tctcgtggac ggcttggttg acgccctccg 300
 cccattgggt gatggtggca ccatttggct gttgactcct ggtgcaggaa aacgtggaac 360
 tattgctcca ggtgaaattt ccgaatccgc acaattggca ggccctcgtcc agaccaccgc 420
 agagcgtctc ggtgattggc agggcagctg cttggtcgcg cgcggcgcgga tgaagaagta 480
 agaattagcc gaaaacacct tccagccagg cgatttgctt aagttagaag gtgtggctag 540
 tattctaaga gtgctcatga ggaagcggaa agcttttaag agagcatgat gcggcttttag 600
 ctcagctgga agagcaactg gtttacaccc agtaggtcgg gggttcgatc cagctgtgaa 660
 caattgcact ttggatctaa ttaagggtt agtcgactat ggatccccgg gtacc 715

<210> 41
 <211> 1204
 <212> DNA
 <213> Bacillus subtilis

<400> 41
 gtcgacaatg aatgtgttaa accgccggca agccttgcag cgagcgtgc tcaatgggaa 60
 aaacaaacag gatgcgtatc atccgtttcc atggtatgaa tcgatgagaa aggatgcgcc 120
 tgtttccttt gatgaagaaa accaagtgtg gagcgttttt ctttatgatg atgtcaaaaa 180
 agttgttggg gataaagagt tgttttccag ttgcatgccg cagcagacaa gctctattgg 240
 aaattccatc attaacatgg acccgccgaa gcatacaaaa atccgttcag tcgtgaacaa 300

```

agcctttact ccgcgcgcga tgaagcaatg ggaaccgaga attcaagaaa tcacagatga      360
actgattcaa aaatttcagg ggcgcagtga gtttgacctt gttcacgatt tttcataccc      420
gcttccgggtt attgtgatat ctgagctgct gggagtgcct tcagcgcata tggaacagtt      480
taaagcatgg tctgatcttc tggtcagtac accgaaggat aaaagtgaag aagctgaaaa      540
agcctttttg gaagaacgag ataagtgtga ggaagaactg gccgcgtttt ttgccggcat      600
catagaagaa aagcgaaaca aaccggaaca ggatattatt tctattttag tggaagcgga      660
agaaacaggc gagaagctgt ccggtgaaga gctgattccg ttgtgcacgc tgctgctggt      720
ggccggaaat gaaaccacta caaacctgat ttcaaatgcg atgtacagca tattagaaac      780
gccaggcggt tacgaggaac tgccgagcca tcttgaactg atgcctcagg cagtggagga      840
agccttgctt ttcagagcgc cggccccggt tttgaggcgc attgccaaagc gggatacggg      900
gatcgggggg cacctgatta aagaaggtga tatggttttg gcgtttgttg catcggcaaa      960
tcgtgatgaa gcaaagtttg acagaccgca catgtttgat atccgccgcc atcccaatcc     1020
gcatattgcg tttggccacg gcatccattt ttgccttggg gccccgcttg cccgtcttga     1080
agcaaatatc gcgttaacgt ctttgatttc tgcttttctt catatggagt gcgtcagtat     1140
cactccgatt gaaaacagtg tgatatacgg attaaagagc ttccgtgtga aaatgtaagg     1200
atcc                                             1204

```

```

<210> 42
<211> 396
<212> PRT
<213> Bacillus subtilis

```

```
<400> 42
```

```

Met Asn Val Leu Asn Arg Arg Gln Ala Leu Gln Arg Ala Leu Leu Asn
1           5           10          15

```

```

Gly Lys Asn Lys Gln Asp Ala Tyr His Pro Phe Pro Trp Tyr Glu Ser
          20          25          30

```

Met	Arg	Lys	Asp	Ala	Pro	Val	Ser	Phe	Asp	Glu	Glu	Asn	Gln	Val	Trp	35	40	45
Ser	Val	Phe	Leu	Tyr	Asp	Asp	Val	Lys	Lys	Val	Val	Gly	Asp	Lys	Glu	50	55	60
Leu	Phe	Ser	Ser	Cys	Met	Pro	Gln	Gln	Thr	Ser	Ser	Ile	Gly	Asn	Ser	65	70	75
Ile	Ile	Asn	Met	Asp	Pro	Pro	Lys	His	Thr	Lys	Ile	Arg	Ser	Val	Val	85	90	95
Asn	Lys	Ala	Phe	Thr	Pro	Arg	Ala	Met	Lys	Gln	Trp	Glu	Pro	Arg	Ile	100	105	110
Gln	Glu	Ile	Thr	Asp	Glu	Leu	Ile	Gln	Lys	Phe	Gln	Gly	Arg	Ser	Glu	115	120	125
Phe	Asp	Leu	Val	His	Asp	Phe	Ser	Tyr	Pro	Leu	Pro	Val	Ile	Val	Ile	130	135	140
Ser	Glu	Leu	Leu	Gly	Val	Pro	Ser	Ala	His	Met	Glu	Gln	Phe	Lys	Ala	145	150	155
Trp	Ser	Asp	Leu	Leu	Val	Ser	Thr	Pro	Lys	Asp	Lys	Ser	Glu	Glu	Ala	165	170	175
Glu	Lys	Ala	Phe	Leu	Glu	Glu	Arg	Asp	Lys	Cys	Glu	Glu	Glu	Leu	Ala	180	185	190
Ala	Phe	Phe	Ala	Gly	Ile	Ile	Glu	Glu	Lys	Arg	Asn	Lys	Pro	Glu	Gln	195	200	205
Asp	Ile	Ile	Ser	Ile	Leu	Val	Glu	Ala	Glu	Glu	Thr	Gly	Glu	Lys	Leu	210	215	220

Ser Gly Glu Glu Leu Ile Pro Leu Cys Thr Leu Leu Leu Val Ala Gly
 225 230 235 240

Asn Glu Thr Thr Thr Asn Leu Ile Ser Asn Ala Met Tyr Ser Ile Leu
 245 250 255

Glu Thr Pro Gly Val Tyr Glu Glu Leu Arg Ser His Pro Glu Leu Met
 260 265 270

Pro Gln Ala Val Glu Glu Ala Leu Arg Phe Arg Ala Pro Ala Pro Val
 275 280 285

Leu Arg Arg Ile Ala Lys Arg Asp Thr Glu Ile Gly Gly His Leu Ile
 290 295 300

Lys Glu Gly Asp Met Val Leu Ala Phe Val Ala Ser Ala Asn Arg Asp
 305 310 315 320

Glu Ala Lys Phe Asp Arg Pro His Met Phe Asp Ile Arg Arg His Pro
 325 330 335

Asn Pro His Ile Ala Phe Gly His Gly Ile His Phe Cys Leu Gly Ala
 340 345 350

Pro Leu Ala Arg Leu Glu Ala Asn Ile Ala Leu Thr Ser Leu Ile Ser
 355 360 365

Ala Phe Pro His Met Glu Cys Val Ser Ile Thr Pro Ile Glu Asn Ser
 370 375 380

Val Ile Tyr Gly Leu Lys Ser Phe Arg Val Lys Met
 385 390 395

<210> 43

<211> 1221

<212> DNA

<213> Bacillus subtilis

<400> 43

```

ctcgagtcga ggaggtcgac taatatgaac gttctgaacc gccgtcaagc cttgcagcga      60
gcgctgctca atgggaaaaa caaacaggat gcgtatcatc cgtttccatg gtatgaatcg     120
atgagaaagg atgcgcctgt ttcctttgat gaagaaaacc aagtgtggag cgttttttctt    180
tatgatgatg tcaaaaaagt tgttggggat aaagagttgt tttccagttg catgccgcag     240
cagacaagct ctattggaaa ttccatcatt aacatggacc cgccgaagca tacaaaaatc     300
cgttcagtcg tgaacaaagc ctttactccg cgcgtgatga agcaatggga accgagaatt     360
caagaaatca cagatgaact gattcaaaaa tttcaggggc gcagtgaagt tgaccttggt     420
cacgattttt catacccgct tccggttatt gtgatatctg agctgctggg agtgccttca     480
gcgcatatgg aacagtttaa agcatggtct gatcttctgg tcagtacacc gaaggataaa     540
agtgaagaag ctgaaaaagc ctttttgga gaacgagata agtgtgagga agaactggcc     600
gcgttttttg ccggcatcat agaagaaaag cgaaacaaac cggaacagga tattatttct     660
attttagtgg aagcggaaga aacaggcgag aagctgtccg gtgaagagct gattccgttt     720
tgcacgctgc tgctggtggc cggaaatgaa accactacaa acctgatttc aaatgcgatg     780
tacagcatat tagaaacgcc aggcgtttac gaggaactgc gcagccatcc tgaactgatg     840
cctcaggcag tggaggaagc cttgcgtttc agagcgccgg ccccggtttt gaggcgcatt     900
gccaagcggg atacggagat cggggggcac ctgattaaag aaggtgatat ggttttggcg     960
tttgtggcat cggcaaateg tgatgaagca aagtttgaca gaccgcacat gtttgatata    1020
cgccgccatc ccaatccgca tattgcgttt ggccacggca tccatttttg ccttggggcc    1080
ccgcttgccc gtcttgaagc aaatatcgcg ttaacgtctt tgatttctgc ttttcctcat    1140
atggagtgcg tcagtatcac tccgattgaa aacagtgtga tatacggatt aaagagcttc    1200
cgtgtgaaaa tgtaaggatc c                                     1221

```

<210> 44

<211> 1221

<212> DNA

<213> Bacillus subtilis

<400> 44

ctcgagtcga ggaggtcgac taatatgaac gttctgaacc gccgtcaagc cttgccgcga	60
gcgctgctca atgggaaaaa caaacaggat gcgtatcatc cgtttccatg gtatgaatcg	120
atgagaaagg atgcgcctgt ttcctttgat gaagaaaacc aagtgtggag cgtttttctt	180
tatgatgatg tcaaaaaagt tgttggggat aaagagttgt tttccagttg catgccgcag	240
cagacaagct ctattggaaa ttccatcatt agcatggacc cgccgaagca tacaaaaatc	300
cgttcagtcg tgaacaaagc ctttactccg cgcgcgatga agcaatggga accgagaatt	360
caagaaatca cagatgaact gattcaaaaa tttcaggggc gcagtgaagt tgaccttggt	420
cacgattatt cataccgct tccggttatt gtgatatctg agctgctggg agtgccttca	480
gcgcatatgg aacagtttaa agcatggtct gatcttctgg tcagtacacc gaaggataaa	540
agtgaagaag ctgaaaaagc ctttttggaa gaacgagata agtgtgagga agaactggcc	600
gcgttttttg ccggcatcat agaagaaaag cgaaacaaac cggaacagga tattatttct	660
attttagtgg aagcggaaga aacaggcgag aagctgtccg gtgaagagct gattccgttg	720
tgcacgctgc tgctggtggc cggaaatgaa accactacaa acctgatttc aaatgcgatg	780
ttcagcatat tagaaacgcc aggcgtttac gaggaactgc gcagccatcc tgaactgatg	840
ccccaggcag tggaggaagc cttgcgtttc agagcgccgg ccccggtttt gaggcgcatt	900
gccaaagcggg atacggagat cggggggcac ctgattaaag aaggtgatac ggttttggcg	960
tttgtggcat cggcaaatcg tgatgaagca aagtttgaca gaccgcacat gtttgatatc	1020
cgccgccatc ccaatccgca tattgcgttt ggccacggca tccatttttg ccttggggcc	1080
ccgcttgccc gtcttgaagc aaatatcgcg ttaacgtctt tgatttctgc ttttcctcat	1140
atggagtgcg tcagtatcac tccgattgaa aacagtgtga tatacggatt aaagagcttc	1200
cgtgtgaaaa tgtaaggatc c	1221

<210> 45

<211> 396

<212> PRT

<213> Bacillus subtilis

<400> 45

Met	Asn	Val	Leu	Asn	Arg	Arg	Gln	Ala	Leu	Pro	Arg	Ala	Leu	Leu	Asn
1				5					10					15	

Gly	Lys	Asn	Lys	Gln	Asp	Ala	Tyr	His	Pro	Phe	Pro	Trp	Tyr	Glu	Ser
		20					25						30		

Met	Arg	Lys	Asp	Ala	Pro	Val	Ser	Phe	Asp	Glu	Glu	Asn	Gln	Val	Trp
		35					40					45			

Ser	Val	Phe	Leu	Tyr	Asp	Asp	Val	Lys	Lys	Val	Val	Gly	Asp	Lys	Glu
	50					55					60				

Leu	Phe	Ser	Ser	Cys	Met	Pro	Gln	Gln	Thr	Ser	Ser	Ile	Gly	Asn	Ser
65					70					75					80

Ile	Ile	Ser	Met	Asp	Pro	Pro	Lys	His	Thr	Lys	Ile	Arg	Ser	Val	Val
				85					90					95	

Asn	Lys	Ala	Phe	Thr	Pro	Arg	Ala	Met	Lys	Gln	Trp	Glu	Pro	Arg	Ile
		100						105					110		

Gln	Glu	Ile	Thr	Asp	Glu	Leu	Ile	Gln	Lys	Phe	Gln	Gly	Arg	Ser	Glu
		115					120					125			

Phe	Asp	Leu	Val	His	Asp	Tyr	Ser	Tyr	Pro	Leu	Pro	Val	Ile	Val	Ile
	130					135					140				

Ser	Glu	Leu	Leu	Gly	Val	Pro	Ser	Ala	His	Met	Glu	Gln	Phe	Lys	Ala
145					150					155					160

Trp	Ser	Asp	Leu	Leu	Val	Ser	Thr	Pro	Lys	Asp	Lys	Ser	Glu	Glu	Ala
			165						170					175	

Glu Lys Ala Phe Leu Glu Glu Arg Asp Lys Cys Glu Glu Glu Leu Ala
 180 185 190

Ala Phe Phe Ala Gly Ile Ile Glu Glu Lys Arg Asn Lys Pro Glu Gln
 195 200 205

Asp Ile Ile Ser Ile Leu Val Glu Ala Glu Glu Thr Gly Glu Lys Leu
 210 215 220

Ser Gly Glu Glu Leu Ile Pro Leu Cys Thr Leu Leu Leu Val Ala Gly
 225 230 235 240

Asn Glu Thr Thr Thr Asn Leu Ile Ser Asn Ala Met Phe Ser Ile Leu
 245 250 255

Glu Thr Pro Gly Val Tyr Glu Glu Leu Arg Ser His Pro Glu Leu Met
 260 265 270

Pro Gln Ala Val Glu Glu Ala Leu Arg Phe Arg Ala Pro Ala Pro Val
 275 280 285

Leu Arg Arg Ile Ala Lys Arg Asp Thr Glu Ile Gly Gly His Leu Ile
 290 295 300

Lys Glu Gly Asp Thr Val Leu Ala Phe Val Ala Ser Ala Asn Arg Asp
 305 310 315 320

Glu Ala Lys Phe Asp Arg Pro His Met Phe Asp Ile Arg Arg His Pro
 325 330 335

Asn Pro His Ile Ala Phe Gly His Gly Ile His Phe Cys Leu Gly Ala
 340 345 350

Pro Leu Ala Arg Leu Glu Ala Asn Ile Ala Leu Thr Ser Leu Ile Ser
 355 360 365

Ala Phe Pro His Met Glu Cys Val Ser Ile Thr Pro Ile Glu Asn Ser
370 375 380

Val Ile Tyr Gly Leu Lys Ser Phe Arg Val Lys Met
385 390 395